What we claim and desire to secure by Letters Patent is:

1. A method for identifying a virtual raster pattern (5) in an image of a plurality of marks (4), each of which is associated with a respective intersection (6) of raster lines (7) belonging to said raster pattern (5), c h a r a c t e r i z e d in that the virtual raster pattern (5) is identified via Fourier analysis of said image.

2. A method according to claim 1, comprising the step of converting the image to a set of unit pulses before the Fourier analysis, which unit pulses are placed at the positions of the marks (4) in the image.

3. A method according to claim 2, wherein each unit pulse is placed at the center of gravity of the corresponding mark (4).

4. A method according to any one of claims 1-3, wherein said Fourier analysis comprises the steps of

calculating a spatial frequency spectrum in two dimensions on the basis of said image,

identifying at least two main vectors in said image, based on said frequency spectrum, and

identifying the raster lines (7) in said raster pattern (5), on the basis of said main vectors.

5. A method according to claim 4, wherein the spatial frequency spectrum is calculated based on a two-dimensional Fourier transform along at least two directions in said image.

6. A method according to claim 4 or 5, wherein the spatial frequency spectrum is calculated on the basis of a central part of the image.

7. A method according to any one of claims 4-6, wherein the step of identifying at least two main vectors comprises the partial steps of

localizing in the spatial frequency spectrum positions of peaks that exceed a given threshold value, and

selecting said at least two main vectors on the basis of said positions.

8. A method according to any one of claims 4-7, wherein the steps of calculating a spatial frequency spectrum and identifying main vectors therein comprise the partial steps of

changing the direction of a direction vector in steps within an angle range,

calculating at least one absolute value of the two-dimensional Fourier transform for the image on the basis of each such direction vector, and

identifying the absolute values that exceed said threshold value.

9. A method according to claim 8, wherein the length of the direction vector is changed within a frequency range that comprises the nominal spatial frequency of the raster pattern (5).

10. A method according to claim 9, wherein the length of the direction vector is changed in steps, pre-

(continued)

(continued claim 10)

ferably in steps that are inversely proportional to a power of 2.

11. A method according to any one of claims 8-10, wherein the position of each of said peaks is localized by calculation of the center of gravity of the absolute values that exceed said threshold value and that are adjacent to each other in the spatial frequency spectrum.

12. A method according to any one of claims 7-11, wherein the partial step of selecting at least two main vectors comprises

letting each position identify a candidate vector (c1-c3),

letting at least one current image transform, which provides a given change in the relationship between two vectors, operate on said candidate vectors (c1-c3), and

selecting as main vectors the candidate vectors that provide a required mutual relationship for said at least one current image transform.

13. A method according to claim 12, wherein each current image transform corresponds to a given image relationship between a sensor (14) which records said image and an object (1) which is provided with said plurality of marks (4).

14. A method according to claim 12 or 13, comprising the steps of sequentially letting a series of different current image transforms operate on said candidate vec-

(continued)

(continued claim 14)

tors (c1-c3), at least until a required mutual relationship is achieved between said candidate vectors.

15. A method according to any one of claims 12-14, wherein said raster pattern (5) is identified on the basis of the image transform that gave rise to the required relationship between the candidate vectors (c1-c3).

16. A method according to claim 12 or 13, wherein the current image transform is selected on the basis of an earlier image transform that gave rise to the required relationship for a previous image.

17. A method according to any one of claims 4-16, wherein said main vectors are selected on the basis of earlier main vectors that were determined for a previous image.

18. A method according to any one of the preceding claims, comprising the step of transforming said marks (4) with the main vectors as bases for producing a rotation-corrected image in which rotation of the marks (4) over the plane of the image is essentially eliminated.

19. A method according to claim 18, comprising the additional step of compensating for perspective in the rotation-corrected image.

20. A method according to claim 18 or 19, comprising the additional steps of

(continued)

(continued claim 20)

determining the width of the peaks corresponding to the main vectors in a spatial frequency spectrum of said rotation-corrected image, and

compensating for perspective in the rotation-corrected image if the width exceeds a given width value.

21. A method according to claim 19 or 20, wherein the step of compensating for perspective comprises the partial steps of

measuring an inclination variation for the raster pattern along each main vector in the rotation-corrected image,

calculating a perspective transform on the basis of the measured inclination variation, which perspective transform essentially eliminates said inclination variation, and

producing a perspective-corrected image by means of the perspective transform.

22. A method according to claim 21, wherein the measurement of the inclination variation for the raster pattern along a selected main vector comprises the partial steps of

via Fourier analysis of at least two subsets of the rotation-corrected image distributed along the selected main vector, calculating at least one subset main vector for each subset,

(continued)

(continued claim 22)

identifying an initial position in the associated subset for each subset main vector, and

calculating the inclination variation along the selected main vector on the basis of said subset main vectors and initial positions.

23. A method according to claim 22, wherein the initial position is identified on the basis of the center of gravity of the marks incorporated in the respective subset.

24. A method according to any one of claims 18-23, comprising the additional steps of

measuring the phase displacement of the rotation-corrected or perspective-corrected image along the respective main vector via Fourier analysis of the rotation-corrected or perspective-corrected image, and

localizing the raster pattern (5) relative to said marks (4) in the image on the basis of the measured phase displacements.

25. A method according to claim 24, comprising the additional steps of

calculating a normalizing transform that places the intersections (6) of the raster pattern (5) a given distance apart, and

operating the normalizing transform on the image in order to produce a normalized image.

26. A method for identifying a virtual raster pattern (5) in an image of a plurality of marks (4), each of which is associated with a respective intersection (6) of raster lines (7) belonging to said raster pattern (5), c h a r a c t e r i z e d by the steps of

detecting main vectors of the image via Fourier analysis,

compensating for rotation in the plane of the image on the basis of said main vectors,

detecting a perspective in the image,

if necessary, compensating for said perspective, and

identifying the virtual raster pattern (5) on the basis of said main vectors.

27. A computer-readable computer program product which comprises a computer program with instructions for causing the computer to implement a method according to any one of claims 1-26.

28. A device for position determination, comprising a sensor (14) for producing an image of a partial surface of a surface (2) which is provided with a position code in the form of a plurality of marks (4), each of which is associated with one of a plurality of intersections (6) belonging to a virtual raster pattern (5), and an image-processing means (16) which is arranged to calculate a position for the partial surface based on a subset of the surface (2), the image-processing means (16) being designed to identify the virtual raster pattern (5) in accordance with any one of claims 1-26.

29. A device according to claim 28, which is hand-held.

30. A device according to claim 28 or 29, which has a means (19) for wireless transmission of position information.